

1 VQE results Aer Estimator (No Shots)

(Full Hamiltonian)			Harmonic Oscillator		$\Lambda = 8$	COYBLA Max 10K Iterations			
Ansatz	Tolerance	Converged runs	Mean iter	VQE min E.	Δ_{min}	VQE median E.	Δ_{median}	Exact	Time
RA r1 rl	1e-01	100/100	60	3.3662e-03	3.3662e-03	1.1522e-02	1.1522e-02	0e+00	00h 00m 19s
RA r1 rl	1e-02	100/100	104	1.4984e-05	1.4984e-05	1.4932e-04	1.4932e-04	-	00h 00m 33s
RA r1 rl	1e-03	100/100	167	4.3202e-07	4.3202e-07	1.4651e-06	1.4651e-06	-	00h 00m 48s
RA r1 rl	1e-04	100/100	292	1.7842e-09	1.7842e-09	1.841e-08	1.841e-08	-	00h 01m 23s
RA r1 rl	1e-05	100/100	455	6.3011e-12	6.3011e-12	1.776e-10	1.776e-10	-	00h 02m 11s
RA r1 rl	1e-06	98/100	488	2.3415e-13	2.3415e-13	1.8599e-12	1.8599e-12	-	00h 03m 34s
RA r1 rl	1e-07	98/100	528	2.9421e-15	2.9421e-15	1.4405e-14	1.4405e-14	-	00h 03m 31s
RA r1 rl	1e-08	100/100	761	-1.6653e-16	1.6653e-16	1.7208e-15	1.7208e-15	-	00h 03m 04s
Ansatz	Tolerance	Converged runs	Mean iter	VQE min E.	Δ_{min}	VQE median E.	Δ_{median}	Exact	Time

Table 1